Space Weather Forecast

Issued on Monday, 05 August 2024 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High Solar activity expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High with five Moderate X-ray flares observed in the last 24 hours, with the strongest a very brief flare from the westernmost portion of the large sunspot region near the southeast limb. This is the largest, and most notable of the nine regions currently on the solar disc, however it appears relatively stable with any apparent growth likely due to the decreasing viewing angle as it moves away from the limb. Also of note is moderately sized region just east of the south-centre disc. This has seen some growth of small spots, mainly around its trailer region, but has remained relatively stable. A further moderate size region in the south-centre has continued to simplify into a moderately sized bipolar configuration, having lots its small mixed magnetic polarity spot within its intermediate region. The other regions remain smaller and stable at this time.

No Earth-directed coronal mass ejections (CMEs) have been observed, however a narrow CME was produced off the east disc with the Moderate flare mentioned above, along with a couple of eruptions from filaments off the southeast and northeast that have yet to be assessed. These are unlikely to have Earth-directed components.

Solar Wind / Geomagnetic Activity: Ongoing CME influence at first, from the 01 Aug CME arrival, was followed by further weak transient arrivals, perhaps with some element of fast wind from an unknown source. Solar wind speeds were initially background, below 400 km/s, but rose slightly, but sharply at 04/2123 UTC to be slightly elevated at 410km/s. A further more gradual increase then occurred from 05/0300 UTC, with solar winds becoming elevated, peaking just over 500km/s by 05/0600 UTC. These winds then eased slightly to be slightly elevated at around 460-500km/s. Interplanetary Magnetic Field was Moderate to Strong, with the strongest field occurring at 04/1230 UTC, and 04/2126 UTC, before easing to be Weak to Moderate after 05/0630 UTC. The north-south component was initially strongly negative (southward), but then rotated from 04/1615 UTC to mainly positive (northward), including a strong maximum value. Geomagnetic activity was initially G3 Strong storm (Kp 7), but eased from 04/1800 to be Unsettled to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue, with occasional Moderate class flares expected and a chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: Further weak transient effects are possible at first, but these are expected to ease later day 1 and into day 2 (05-06 Aug) with solar winds then likely to ease. No further notable enhancements are currently forecast through the period. Mainly Quiet geomagnetic activity is expected with a chance of isolated Unsettled intervals. There is a slight chance of Active to G1 Minor Storm intervals, mainly on day 1 (05 Aug).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with only a slight chance of solar radiation storms occurring. These are most likely from any notable solar flares occurring on the Suns western hemisphere.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	10	5	1	5
Strong	G3	Yes	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	90	80	80
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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